DOCUMENT RESUME

ED 169 435 CG 013 377

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TITLE When Individual Dispositions and Social Pressure Conflict: A Catastrophe.
PUB DATE 78
NOTE 22p.; Paper presented at the Annual Convention of the American Psychological Association (86th, Toronto, Ontario, Canada, August, 1978)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Behavior Patterns; College Students; *Conflict Resolution; *Group Dynamics; *Individual Characteristics; Interaction Process Analysis; *Psychological Patterns; Social Attitudes; *Social Behavior
IDENTIFIERS *Catastrophe Theory

ABSTRACT

Personal dispositional variables conflicting with social pressure and the resulting behavior, which follows a cusp catastrophe, were investigated. Female undergraduates (N=200) completed a set of attitude questionnaires using a Crutchfield console. Results indicate that: (1) when social pressure is low, behavior is a smooth, monotonic function of disposition; (2) when social pressure is high and disposition is low, behavior is low; and (3) when social pressure is high and disposition is high, relevant behavior will be bimodal with some people engaging in low levels of behavior and some engaging in high levels of behavior. In dynamic terms, shifts in dispositions at high levels of social pressure result in discontinuous i.e. "catastrophic" changes in behavior, and increments in social pressure at high levels of disposition result in divergence, i.e. bimodality. (Author)

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ED169435

When Individual Dispositions and Social Pressure Conflict: A Catastrophe

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Paper presented at the symposium "Catastrophe Theory in Psychology" at the 86th Annual Convention of the American Psychological Association, 1978, Toronto, Ontario, Canada.

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This is a long sumposium, nearly three hours. Many of the things you've heard about sound terrible, strange, dental or zoological--catastrophes, bifurcation sets, cusps, butterflys, swallowtails. You've followed much of it, and much of it seems interesting, but early on you detected something fundamentally wrong with the approach. You wanted to say something about it then, but this is a formal symposium and there are a lot of other persons present. How would it look if you interrupted? People might think you are a little strange, and on and on. In short there is strong social pressure against saying anything. So, you didn't say anything. And then the next speaker addressed the group and he made the same error that bothered you earlier. At that point you were more strongly disposed to say something but still you did not. Perhaps a third speaker also failed to see the error that is so obvious to you and your disposition to say something increased again; and, again, you did not speak up.

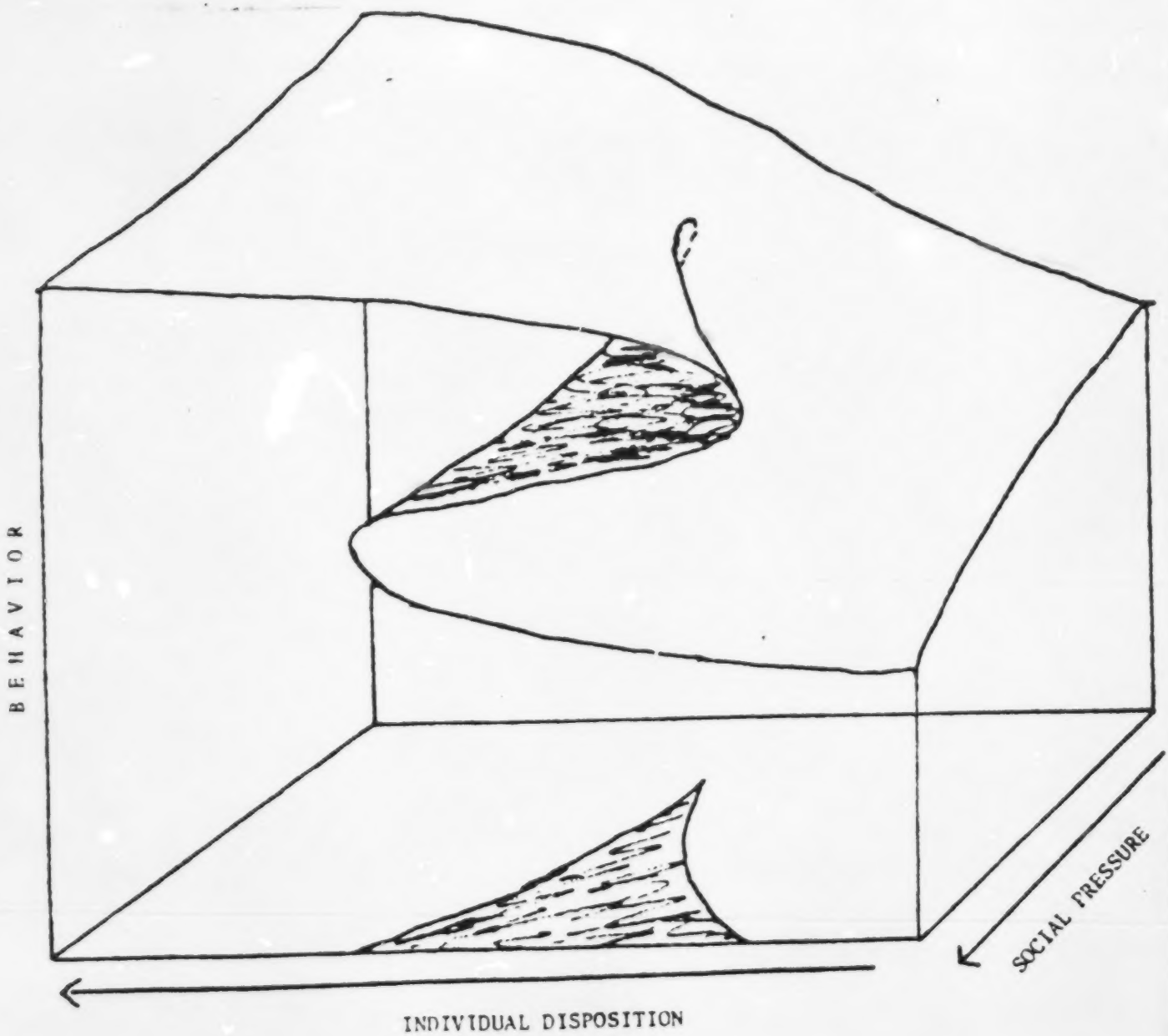
My presentation today deals with this behavior. Namely, I am concerned with the question of what happens when individual dispositions to behave in a particular way and social pressure conflict. Predictably, my answer has something to do with catastrophe theory. I will argue that when dispositions and social pressure conflict the result is a cusp catastrophe with individual disposition as a normal factor and social pressure as a splitting factor. (Incidentally, I thought this was an original idea until I reviewed the literature and found that Chidley (1976) had developed a similar model for consumer behavior, and when I talked to Brian Flay, the organizer of this symposium, I found that he too was thinking along similar lines.)

Let me briefly illustrate with this slide.

Insert Figure 1

When you came to the symposium there was already present strong social pressure

Figure 1. Cusp catastrophe with individual disposition as a normal factor and social pressure as a splitting factor.



against standing up and pointing out the problems with catastrophe theory, and you were not particularly disposed to do so. In short, you were in the front right corner of the surface. As you realized the error that was being made by the first speaker, your disposition to speak increased some and it continued to increase with each succeeding speaker who made the same error. Notice that although your disposition to speak has increased substantially, the probability of your speaking has increased but little. Now, if I also say the thing that has been bothering you, your disposiion to say something will be increased again, perhaps to this point and.... Oh well.

Now, suppose you were in a small group in one of the cocktail lounges around here and you heard the same thing you are hearing this morning. Under these conditions there is very little social pressure against you speaking your piece. You are at the back of the figure and it is plain to see that the probability of your speaking up will be a smooth, monotonic function of your disposition to speak.

Now let me become a little more formal in terms of reviewing the relevant literature. My hypothesis restated is: Where [any] individual disposition and [any] social pressure are in conflict regarding some behavior, the result will be a cusp catastrophe with disposition serving as a normal factor and social pressure serving as a splitting factor. By disposition is meant an individual's tendency to engage in a particular behavior, to approach or avoid a particular person, place or thing. This tendency is generally summarized in terms of attitude. Social pressure refers to forces of social origin outside of the individual that can exert influence on the individual.

What this means is that changes in disposition (with social pressures held constant) will be accompanied by monotonic changes in behavior. Sometimes those behavioral changes will be smooth (under low social pressure) and

sometimes they will be discontinuous (under high social pressure). On the other hand, changes in social pressure (with disposition held constant) always result in smooth changes in behavior. Furthermore, depending on the level of disposition, increases in social pressure can lead to increases in behavior or decreases in behavior. These notions are laid out more explicitly in the following hypotheses.

"The discontinuity hypothesis." At high levels of social pressure, there are points at which small changes in disposition will be associated with large changes in behavior. At low levels of social pressure, there will be a smoother relationship between disposition and behavior.

The low social pressure half of the prediction is easy to understand and there are data to support it. That is, there are a number of studies that show a relationship between attitudes and behavior (cf. Fishbein & Ajzen, 1975). However, this relationship is far from being universally accepted (e.g., Mischel, 1968; Wicker, 1969). Further the data are generally collected in a setting with uncontrolled social pressure and usually little attention is given to the form of the relationship. Most problematic, I could locate no study that examined behavior change as a function of attitude change over systematically varied points on the attitude continuum.

The discontinuities predicted under high social pressure are more interesting. Psychologically, what might underlie such a behavior dynamic? Let us speculate. Perhaps where strong social pressure is concerned, persons find it difficult to conform only partially. That is, where strong potential opposition is concerned, they tend to maintain an Unequivocal Behavioral Orientation (Jones & Gerard, 1967), i.e., an unambivalent, unambiguous stance vis à vis the attitude object. To behave at a moderate level may require even more effort than to behave more extremely. In the first place,

an incomplete deviation from the pressure group will tend to keep an individual's psychological ties to that group intact. Thus the group can exert considerable pressure. On the other hand, if the individual takes a large jump in behavior, he will come closer to severing group ties and thus be less vulnerable to pressure. Further, with a moderate level of behavior, it becomes difficult and complicated to defend against social pressure. The individual must explain (to himself as well as others) why the behavior is attractive enough for him to endure group sanctions on its behalf, but at the same time not attractive enough to do maximally. It is much simpler to explain why the behavior is minimal or maximal. Thus, in the face of strong social pressure, the individual tends to engage in minimal behavior until such time as his own disposition is sufficiently strong that he abruptly changes to maximal behavior. Unfortunately, there are little data available which meet the conditions necessary to test the high pressure half of the hypothesis.

"The hysteresis hypothesis." At high levels of social pressure prior levels of dispocition will influence current behavior. That is, persons currently at a moderate level on the disposition variable will exhibit higher levels of behavior if they have previously been high on the disposition variable than if they have previously been low on the disposition variable. In more dynamic terms, under consistent high social pressure changes in disposition will result in changes in behavior. However, the point on the disposition continuum at which the behavior will jump will differ. It will be at a higher point if the disposition is increasing and lower if the disposition is decreasing. This difference in change point is termed hysteresis. Hysteresis will be attenuated or disappear at low levels of social pressure.

Again, it is possible to speculate about the psychological mechanisms underlying this intuitively plausible aspect of the model. One possibility is a kind of psychological inertia (Tesser & Paulhus, 1976). Persons simply tend to continue doing what they have been doing. Another possibility comes from Festinger's original statement of cognitive dissonance theory (1957). The theory suggests that as the disposition decreases, high levels of behavior become increasingly dissonant with putting up with the social pressure. In order to reduce this dissonance, the individual might avoid the source of social pressure, i.e., discrepant information, and continue at a high level of behavior in order to find additional consonant cognitions. However, when the disposition gets sufficiently low (and dissonance sufficiently high) the individual will finally change his behavior. On the other hand, if the individual is at a low level of behavior, then increasing levels of disposition create dissonance. As the dissonance increases, the individual will attempt to reduce the dissonance by avoiding high levels of behavior which would increase dissonance. At the same time, he will expose himself to the social pressure which is consonant with low levels of behavior. If the disposition continues to increase producing more and more dissonance, a point will be reached where the individual will change his behavior and switch from low to high behavior. It is the dissonance reduction activities that are responsible for the hysteresis. That is, attempts at dissonance reduction tend to keep the individual at high levels of behavior as the disposition is decreasing and to keep the individual at low levels of behavior as the disposition is increasing. A similar analysis of hysteresis could be made using self-perception theory (Bem, 1972) since the two theories are often interchangeable (Greenwald, 1975).

In addition to inertia, cognitive dissonance and self-perception as psychological mechanisms that might account for hysteresis, psychological

commitment (Kiesler, 1971) may also serve as such a mechanism. To the extent that an individual is committed to a particular behavior, that behavior becomes more resistant to change. Commitment increases with the "publicness" of the behavior and the cost of the behavior, and decreases with the rewards associated with the behavior. A high disposition is a reward for high levels of behavior and a cost for low levels of behavior; social pressure is a cost for high levels of behavior and a reward for low levels. Thus, a commitment will tend to keep the individual's behavior from changing and the result will be hysteresis.

There is some evidence in the social psychological literature for the hysteresis hypothesis. For example, in impression formation research there is evidence of primacy effects (cf. Anderson, 1974; Tesser, 1968). Subjects first presented information which predisposes them to like a stimulus person and then information which predisposes them to dislike the person end up liking the person more than do subjects provided the same information but in the reverse order. Although these findings support the hysteresis hypothesis they generally are obtained under conditions of low social pressure. I would expect this hysteresis effect to be enhanced under strong social pressure.

There is also evidence that prior disposition-consistent behavior produces hysteresis. For example, Walster and Presthold (1966) found that ratings of an applicant were less subject to change by later information if the subject had previously rated the person than if he had not previously rated the person. Furthermore, both dissonance theory (Festinger, 1957; Wicklund & Brehm, 1976) and self-perception theory (Bem, 1972) predict that this phenomenon should be more pronounced under strong social pressure. However, the data collected in support of these theories generally relate prior behavior to attitude change rather than to present behavior.

There is encouraging evidence from the conformity literature. This evidence is nicely summarized by Gerard (1965). Although other assumptions are possible, for present purposes, let us assume that an individual's disposition to go along with the group varies somewhat from critical trial to critical trial. The hysteresis hypothesis predicts that under high social pressure such as that in the typical conformity study, behavior should remain consistent even over some changes in disposition; early conformity should produce later conformity, early independence should produce later independence. According to Gerard (1965) "A relevant finding in Asch's original experiment was that when a subject started out being independent, by making correct judgements on the critical trials, he tended to remain independent until the end of the series" (p. 264).

The hysteresis effect should increase with social pressure. Asch (1956) varied the number of comparison lines, having either two or three. If we assume that social pressure is greater with two comparison lines than with three, then this proposition is also supported. Compared to the three line condition "The two comparison line variaton. . .produced a dramatic bimodal reaction with subjects tending to go along with the group on every trial or not at all" (Gerard, 1965, p. 265).

Social pressure seems to be greater in a face-to-face situation than in an anonymous situation. Deutsch and Gerard (1955) examined this variable in a conformity situation and found that compared to the anonymous conditions, subjects who yielded in the face-to-face condition tended to do so with greater frequency. Also the error distribution was bimodal in the latter but not the former.

These studies provide encouraging support for the hysteresis hypothesis (and the divergence hypothesis--see below). However, their interpretation

depends on assumptions about fluctuating dispositions and social pressure. What is needed are studies manipulating these variables and a demonstration of the generality of the phenomenon.

"The divergence hypothesis." This hypothesis focuses on the middle range of the disposition variable. Suppose we select a dispositional level just to the right of the point of the fold and another just to the left of the point of the fold. There will be a small difference between these dispositions; and under low social pressure, there will be a small difference in behavior. However, with increasing social pressure, the behavior associated with these two dispositions will diverge since one disposition (the higher) will be associated with the top sheet of the fold and the other (the lower) will be associated with the bottom sheet. The top sheet becomes higher with social pressure and the bottom sheet becomes lower with social pressure. In short, small differences in disposition to behave (in a particular range in the disposition variable) will be associated with increasingly larger differences in behavior as a function of social pressure.

Again, we might speculate on the psychological mechanisms which might underlie the divergence phenomenon. It has already been noted that as the potential impact of social pressure increases, the individual may find it increasingly necessary to adopt an unequivocal behavior orientation. Thus, as social pressure increases, we would expect persons to become more extreme. What about the direction of these changes? The decrease in behavior as a result of social pressure is easily understandable as a straightforward conformity effect. The increase in behavior as a result of social pressure, however, needs some explication. Brehm (1972) has suggested that whenever an individual feels pressure to adopt a particular behavior, the pressure sets up an aversive motivational state called "reactance." Reduction of reactance results from the restoration of the freedom threatened in the

influence attempt. One way of restoring freedom is by adopting a position counter to the influence attempt. Thus, decreases in behavior as a result of increases in social pressure may be understood as attempts to reduce reactance.

There are some data relevant to this hypothesis. One implication of the hypothesis is that sometimes social pressure can move behavior in the direction of the pressure and sometimes away from the pressure. There is much evidence from the conformity literature indicating that social pressure will move behavior in the direction of that pressure (e.g., Asch, 1956). Within the context of reactance theory (Brehm, 1966; 1972) the more interesting half of the implication has been explored. Namely that social pressure will move behavior in the direction opposite to that pressure. For example, Burton (described in Brehm, 1966) found that when subjects had no initial preference, they chose opposite to a suggestion, i.e., pressure, from a peer. Sensenig and Brehm (1968) produced evidence of the same phenomenon. Furthermore, Weiner (described in Brehm, 1966) demonstrated that persons under social pressure to select their favored alternative will abandon that alternative more often that subjects not under such pressure.

Kiesler's (1971) work on commitment has produced some evidence that social pressure has different effects at different levels of disposition. Kiesler and Mathog (reported in Kiesler, 1971) induced their subjects to engage in a particular behavior few (0 or 1) versus many (3) times. Subsequently, the "3-times" subjects showed a more positive attitude (disposition) toward the behavior as evidenced by their greater verbal rejection of an attack on it. More important, the subjects with the stronger predisposition (3-times subjects) reacted to social pressure (the attack) by becoming more willing to engage in the behavior while those with a weaker predisposition reacted to

the pressure by becoming less willing to engage in the behavior. In an additional study, Kiesler, Mathog, Pool, and Howenstein (reported in Kiesler, 1971) induced some housewives to sign a petition supporting their own attitude. Attitude measures revealed that this made them more favorably disposed toward the issue than housewives who were not induced to sign the petition. As before, social pressure, i.e., verbal attack of their position, significantly increased the willingness to engage in behaviors supportive of that position for those with a stronger predisposition, while slightly decreasing this for those with a weaker predisposition. Breadth of behaviors was also found to increase with a stronger disposition and decrease with a weaker disposition as a result of the pressure.

These latter studies are important in that they show that social pressure can push behavior in either direction, and also that the particular direction is at least partially dependent on one's initial disposition. Disposition and social pressure seem to interact to produce "catastrophe-like" results. However, the conformity and the reactance studies usually deal with only one level of disposition and the Kiesler studies confound disposition with prior behavior. Thus, the predicted divergence phenomenon needs further exploration.

A number of social psychological areas of research have been touched upon in reviewing the literature for work relevant to the cusp model. Mention has been made of speaking up at symposiums, attitude-behavior research, impression formation, dissonance theory, self-perception theory, conformity, reactance theory, and commitment. Clearly the formulation has great generality and can be used to summarize and pull together divergent research areas. Further, I have focused on mechanisms that could be involved in the various aspects of the model. For example, the need for an unequivocal behavioral orientation in the face of strong social pressure might be responsible for

"catastrophic" shifts in behavior, dissonance theory or commitment theory could account for hysteresis, and reactance theory might explain divergence. It is as though each of these theories, like the proverbial blind men, describe (and explain) a different part of the elephant. Catastrophe theory appears to have the potential for giving a broader picture.

A Pilot Study

I have speculated a great deal this morning. I do this not because I think speculation is particularly persuasive but rather because there is a real paucity of the kind of data necessary for evaluating the present model. In our social psychology laboratory at the University of Georgia we are only now beginning to remedy this situation and I would like to describe a modest pilot study recently completed by Rich Reardon and myself.

For this study we assumed that conformity behavior can be described by a cusp catastrophe having strength of attitude toward the issue, i.e., disposition, as a normal factor and opposing social pressure as a splitting factor. Given high social pressures, the specific predictions are that changes in behavior will be discontinuous and that hysteresis will be observed. Let us focus on the effects of strength of agreement with an issue when social pressure to disagree is very high, i.e., the front slice of our Figure 1. Let us assume that an individual has been confronted with an attitude statement that he very strongly endorses and that he publicly agrees with it, i.e., nonconforms in spite of strong social pressure (the front right corner of the figure). Now let us trace how he should respond to a second item as a function of this prior behavior. If the second item is one that he also feels strongly about he should not conform. Indeed, he will not conform as long as the strength of his attitude toward the second item is on the high side, or under the fold. However, if the strength of his attitude is on the other side of the fold.

we would expect a catastrophic change in behavior to that of conformity. This set of expectations concerning conformity as a function of strength of attitude assuming nonconformity on a prior item is shown as the broken line in the next figure.

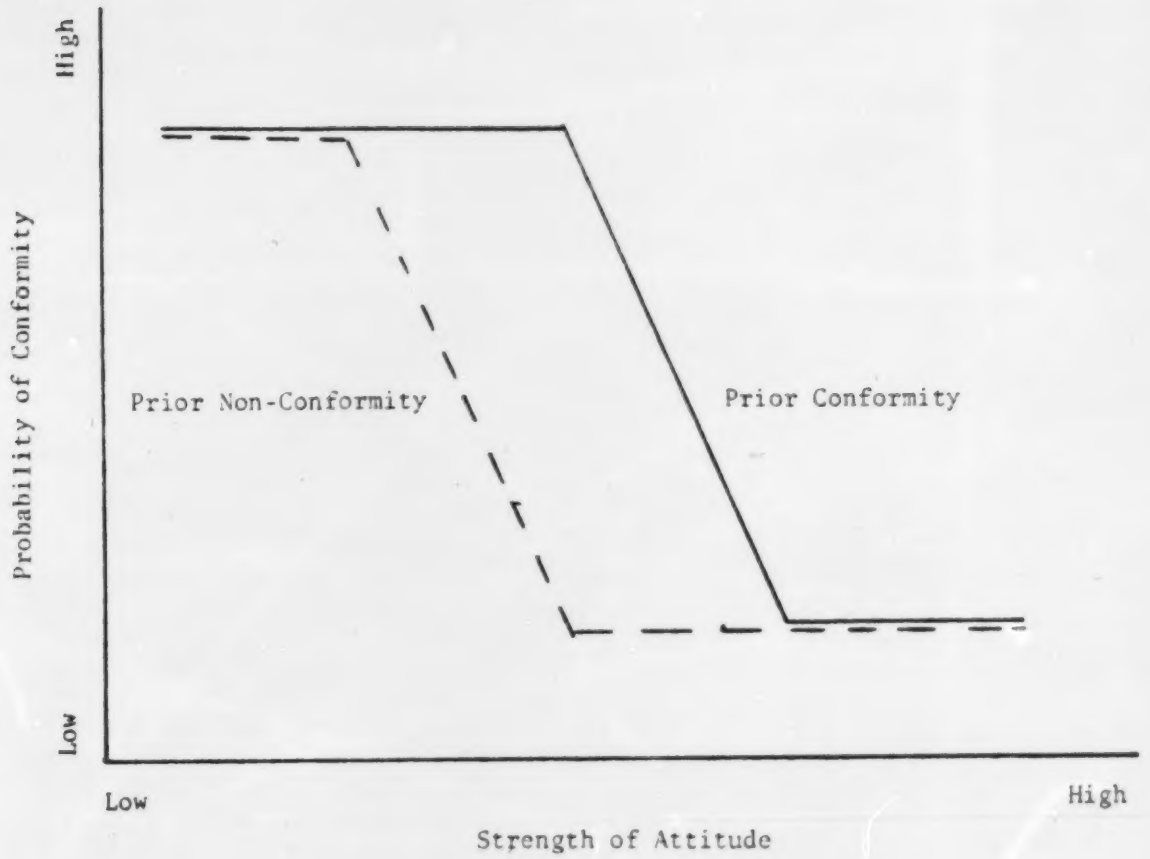
Insert Figure 2 about here

Now, if we go through the same exercise of tracing the public response to items of varying levels of internal disposition to agree assuming conformity on a prior item, i.e., moving from left to right in Figure 1, we would generate the set of predictions shown by the solid line in Figure 2. There are several things to notice about the predictions in Figure 2. Conformity is expected to change discontinuously as a function of internal disposition, i.e., strength of attitude; the discontinuous shift in conformity is expected to occur at different points as a function of prior conformity (hysteresis); responses in the middle of the range are expected to be bimodal; responses at the ends are expected to be unimodal.

In order to test these predictions we administered attitude questionnaires to approximately 200 female undergraduates. Eighty-eight of these pre-tested subjects were scheduled in groups of four for a second session. When they arrived each was seated in front of a Crutchfield console and separated from the other subjects by a partition. They were told that the experiment dealt with the discussion of some attitude issues but that before getting to the discussion they would each be asked to respond to the items anonymously so that they could get a feel for the items and how others stood on the issues.

Each subject was led to believe that she was subject "B" and the Crutchfield device made it possible to control the feedback to each subject by

Figure 2. Predicted conformity as a function of prior conformity and strength of attitude (disposition).



simulating subjects A, C, and D. The items used were from the initial questionnaire so we knew how each subject felt about each issue. After a couple of items on which subjects found the group mostly agreeing with them, the experimental manipulations were initated: Prior Conformity and Attitude Strength were manipulated through selecting appropriate items from the subjects' pre-test.

Prior Conformity/Non-Conformity. Item three was chosen because all subjects in a group initially held either a very strong or a rather weak pre-test position (i.e., "very strongly agree/disagree" or "slightly agree/disagree"). Person B was asked to respond last on this item. Subjects' consoles were programmed to show unanimous disagreement with their pre-test positions. It was expected that subjects holding a strong position would resist conforming to the group pressure when making their responses. Subjects holding a weak position were expected to conform.

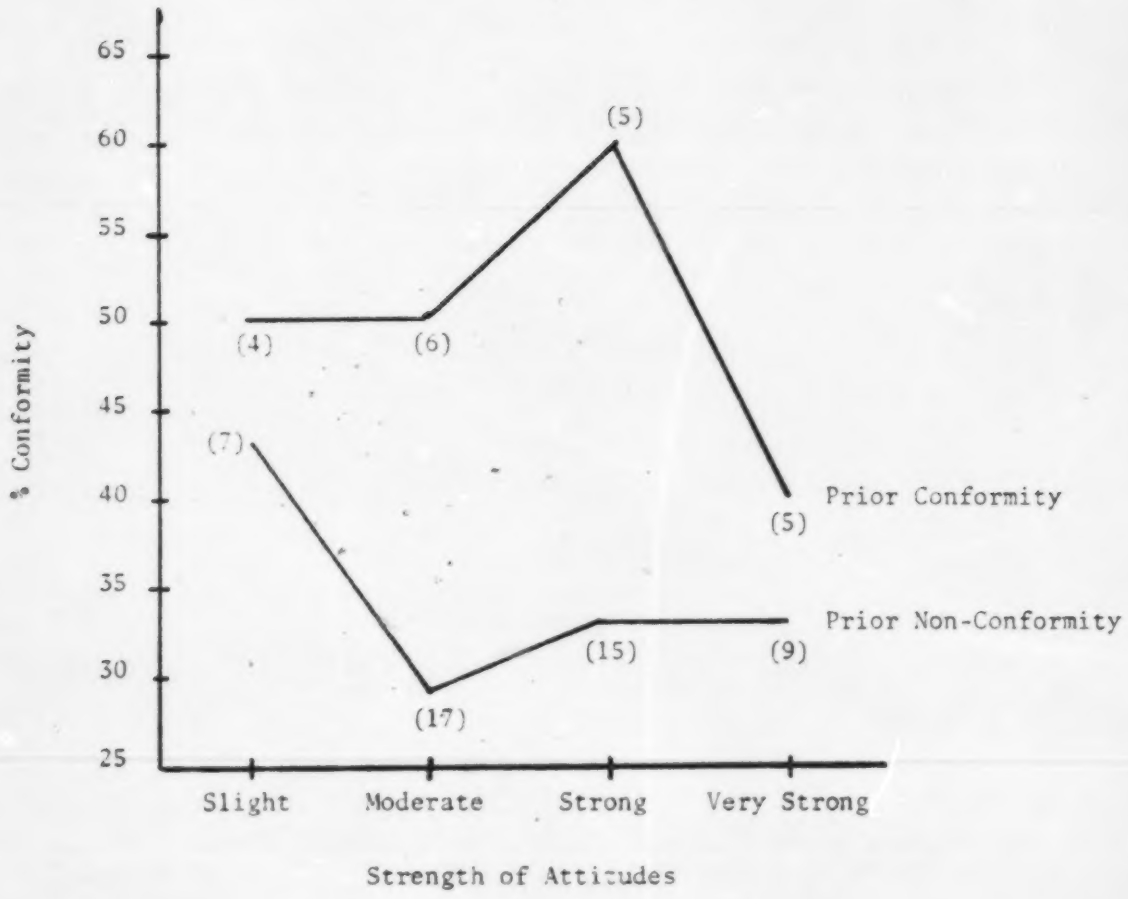
Attitude Strength. Item four was chosen from the questionnaire because it dealt with the same topic as item three. Again, person "B" responded last and faced a unanimous disagreeing majority. For item four, however, subjects varied in their attitude strength. There were four levels of strength corresponding to four categories of the pre-test rating scales: "very strongly", "strongly", "moderately", and "slightly". (Subjects falling into the fifth, "very slightly", category were combined with the "slightly's".)

The dependent variable was whether a subject conformed in the face of strong, opposing social pressure.

Subjects who failed to conform to the experimental manipulations (N = 16) or showed some awareness of the experimental procedures (N = 4) were eliminated.[1] The behavior of the remaining subjects is shown graphically in Figure 3.

Insert Figure 3 about here

Figure 3. Percent of subjects who conformed in the face of strong social pressure as a function of prior conformity and strength of attitude. (Number of subjects in each condition in parentheses.)



Since the number in many of the cells are so small, tests of significance are inappropriate. These data are intended only to be suggestive. Let us review our expectations and see if the results are consistent with them. First, we expected discontinuities. Visual inspection is consistent with this expectation: Under Prior Conformity there is no decrease in conformity with increasing attitude strength from Slight to Moderate to Strong and then there is a large drop (20%) to Very Strong. Similarly, with Prior Non-Conformity there is a substantial drop from Slight to Moderate (15%) and then, there is no decrease in conformity with increasing attitude strength from Moderate to Strong and from Strong to Very Strong. Second, we expected hyseteresis, i.e., the discontinuity should come at different levels of attitude strength depending on Prior Conformity. In this case the jump from non-conformity to conformity should come at a lesser attitude strength than the jump from conformity to non-conformity. This also is evident: The jump point is between Slight and Moderate Strength with Prior Non-Conformity but between Strong and Very Strong for Prior Conformity. Finally, on either side of the fold we expected little difference as a result of Prior Conformity/Non-Conformity, but a large difference in the neighborhood of the fold. Again, the data are consistent. On both the high and low ends of the attitude strength manipulation there is little difference in Prior Conformity/Non-Conformity (7%). In the middle, there are sizable differences: 21% at Moderate and 27% at Strong.

In spite of the small n's we are encouraged enough by these data to continue looking. We plan to increase the numbers of subjects in this design and also to run low pressure conditions to see if we get smooth functions and no hysteresis. Barring any unforseen catastrophe, by this time next year we hope to have had a clearer look at the potential of the model. In the mean time, we shall keep an open mind.

Footnote

1. Failure to conform to the manipulation was not affected by whether the condition was Prior Conformity or Prior Non-Conformity ($\chi^2 < 1$). Although including these subjects in the analysis of the dependent variable does not substantially alter the shape of the curves they are not included in Figure 3. A post-experimental questionnaire designed to assess suspicion about the experimental procedures using the funnel technique (Page, 1973) revealed 4 "aware" subjects. They too were eliminated from futher consideration.

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